# Data Management Report and Planning Document

Gold King Mine Response

Emergency Response Data Team
August 31, 2015

## 1. BACKGROUND

On August 5, 2015, roughly 3 million gallons of acid mine drainage released from the Gold King Mine near Silverton, Colorado. This material impacted Cement Creek as well as the Animas and San Juan Rivers downstream. EPA's Emergency Response Data Team was deployed to establish and support the personnel, procedures and tools required to collect, process and distribute response data.

The Data Team is coordinated by EPA's Environmental Response Team (ERT) and is composed of On-Scene Coordinators (OSCs) skilled in the collection, processing and distribution of data during EPA response operations. The primary function of the Data Team is to establish a data management infrastructure during the initial phases of a major incident that supports EPA's response operations and distributes data to EPA's response partners and the public.

The Data Team's actions are to be consistent with the National Contingency Plan (NCP). The NCP is the federal government's response blueprint and specifically provides for an efficient, coordinated, and effective response to releases of hazardous substances to the environment. 40 CFR 300.135(c) of the NCP requires that OSCs collect pertinent facts about the release, such as its source and cause; the nature, amount, and location of released materials; the probable direction and time of travel of released materials; the pathways to human and environmental exposure; and the potential impact on human health, welfare, and safety and the environment. 40 CFR 300.135(d) requires that response efforts be coordinated with other appropriate federal, state, local, and private response agencies and 40 CFR 300.135(n) suggests that all appropriate public and private interests should be kept well informed and that their concerns are considered throughout a response. 40 CFR 300.155(a) states that when an incident occurs, that it is imperative to give the public prompt, accurate information on the nature of the incident and the actions underway to mitigate the damage.

## 2. DATA MANAGEMENT STRATEGY

The Data Team organized its data management activities at the Gold King Response into the three phases: Initial Response, Continued Response and Transition and Long Term Monitoring.

Phase 1: Initial Response *(completed on roughly August 14)*

1. Deploy the personnel, tools and processes required to characterize and track the plume of contaminated water as it moves downstream.
2. Establish the infrastructure to support future field operations and the release of data to EPA's response partners and the general public.

Phase 2: Continued Response and Transition *(projected to be completed by September 30, 2015)*

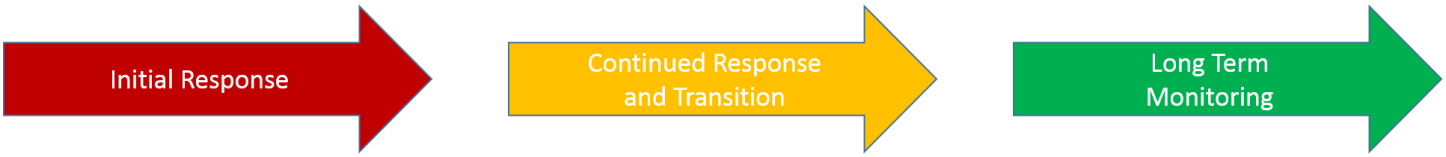
1. Solidify data management procedures to support field operations. Support for field operations at the Gold King adit will continue as long as they are needed.
2. Implement appropriate mechanisms to approve data for public release report data and expose data that has been approved for public release in a web enabled mapping tool.
3. Identify historical datasets and coordinate with EPA's Office of Wetlands, Oceans and Watersheds

(OWOW) to expose these datasets using EPA's Water Quality Exchange (WQX) data archive.

Phase 3: Long Term Monitoring *(to be initiated no later than October 1, 2015)*

1. Archive data that has been approved for public release in the WQX database.
2. Develop processes so long term sampling teams coordinate with Headquarters and submit data that is approved for public release directly to WQX.
3. Expose data in WQX (including historical data, archived response data and long term monitoring data) using the web enabled query and mapping tools maintained by OWOW.

## 3. ROLES AND RESPONSIBILITIES




**Data Team**
- Manage data in Scribe, Scribe.net, epaosc.org and spatial data viewers to support field operations.
- Generate data tables and messaging for public release.
- Release data and messaging using epaosc.net and a publicly accessible spatial data viewer.

**Data Team**
- Manage data in Scribe, Scribe.net, epaosc.org and spatial data viewers to support field operations.
- Submit data reports to OEM.
- Maintain publicly accessible spatial data viewer.

**HQs OEM**
- Approve data and messaging for public release.
- Post data and messaging for public consumption.

**Data Team**
- Archive response data in WQX.

**Sampling Teams**
- Submit data reports to HQs.
- Load approved data to WQX.

**HQs OEM/OWOW**
- Approve data and messaging for public release.
- Post messaging for public release.
- Maintain publicly accessible query and web mapping tool that exposes data in WQX.

## 4. DISCUSSION

Phase 1: Initial Response *(completed on roughly August 14, 2015)*

In a fast moving response like the Gold King Mine effort where a plume of contaminated water is moving downstream, distributing data to EPA's field teams, EPA's response partners (including Tribal, State and Local entities) and the general public is critical. Within the first few days of the response, the Data Team established the data management processes and mechanisms required to effectively support EPA's field operations across Regions 6, 8 and 9 and distribute data to EPA's response partners and the public. By August 7, 2015, the Data Team was collecting and processing basic response data such as images, sampling locations, preliminary analytical results, water quality measurements (such as pH), and aerial imagery that tracked the leading edge of the plume. EPAOSC.org websites for this response effort

were available both internally and externally on August 7, 2015 and the Data Team established a web enabled mapping tools to support both EPA operations and distribute data to the public.

Typically, EPA's response partners are provided access to EPA's non-public operational website and web mapping tool during a response so that they can view and utilize the all data that is being generated. During this response, Leadership directed the Data Team to not share EPA's operational website and release situational data to EPA's tribal, state and local response partners.

Typically, analytical data is validated before it is released to the public but all other data (sampling locations, field measurements, imagery) are released to the public as soon as the data passes certain quality assurance requirements. During this response, Leadership directed that no data be released until it was messaged and approved for release by EPA public information officials. The unhindered and transparent release of sampling locations, photos, field measurements and most importantly the reconnaissance effort of EPA's ASPECT aircraft to track the leading edge of the release as it travelled downstream might have been useful to EPA's response partners and the general public who ended up receiving very little information from the Agency.

OSCs must be empowered to report data to the public during the very early stages of a response even if that data is not "messaged" nor completely validated. Although the use of the EPA.gov site may be appropriate for the public release of information on certain incidents, it is critical that EPAOSC.org remain a tactical asset that it be used early in the response until the required infrastructure to use and maintain EPA.gov is established.

Phase 2: Continued Response and Transition (*projected to be completed by September 30, 2015)*

The Data Team continues to solidify data management across the entire response in support of EPA's field operations.

At the start of Phase 2, EPA Leadership determined that EPA Headquarters and not Area Command would be responsible for approving all data released to the public. The Data Team has coordinated with Environmental Units at the regional, area command, and headquarters level to develop a reporting procedure that supports approval process as well as the posting of raw results to the EPA.gov website. and updating the . This reporting procedure calls for the Regions providing Headquarters with data tables that meet the data standards identified in Table 1.

The Data Team has developed a web mapping tool that exposes all data that has been approved for public release. This mapping tool can be accessed through the EPA.gov website and will be supported until the end of Phase 2 (currently projected to be completed by September 30, 2015).

Phase 3: Long Term Monitoring *(to be initiated no later than October 1, 2015)*

During the Initial Phase of the response, EPA's WQX database was identified as the final archive for all response data. This decision provides for a stable and publicly accessible database environment over the long term and it supports the need to compare the post-incident dataset with historical data that has been collected by various entities and is already managed in WQX.

The Data Team assumes that the data collected to support long term monitoring will be managed in EPA OWOW's WQX and that EPA's OWOW will support the query and mapping tools required to report data to the public.

The Data Team also assumes EPA OEM and EPA OWOW will modify the process by which sampling crews report long term monitoring data and it is approved for public release.

*Table 1: Headquarters Reporting Requirements*

| Data Element | Description | Formatting Requirements | Example |
|---|---|---|---|
| Site_No | Unique identifier associated with each EPA regions' response effort. | Free Text | Site01 |
| Samp_No | Unique identifier associated with the sample that was collected. | Free Text | Sample01 |
| Location | The geographic place where the sample was collected. | Free Text | GKMSE100 |
| CAS_NO | Code or common identifier associated with the Analyte. | Valid Values | 7439-96-5 |
| Analyte | Parameter measured during the lab analysis. | Valid Values | Manganese |
| Total_Or_Disolved | Fraction of the media that was analyzed by the lab. | Valid Values | T |
| Result | | Numeric | 1410 |
| Result_Units | Units of measure associated with the result. | Valid Values | mg/kg dry wt |
| Detected | Indication whether or not the analyte was detected during analysis. | Valid Values | Y |
| Result_Qualifier | Qualifier either assigned by the lab or during the data review process. | Valid Values | UV |
| SampleDate | The date that the sample was collected. | MMDDYY | 080715 |
| SampleTime | The time that the sample was collected. | 24HH:MM | 10:00 |
| MDL | Method detection limit as reported by the lab. | Numeric | 2.01 |
| MDL_Units | Units of measure associated with the MDL. | Valid Values | mg/kg dry wt |
| Reporting_Limit | Reporting limit as reported by the lab. | Numeric | 5.01 |
| Reporting_Limit_Units | Units of measure associated with the Reporting Limit. | Valid Values | mg/kg dry wt |
| Matrix | The media that was sampled and analyzed by the lab. | Valid Values | Sediment |
| QA_Comment | Comments generated during the data review process. | Free Text | L2 Val |
| Latitude | Northing location of sampling point. | Decimal Degrees | 37.3554 |
| Longitude | Easting location of sampling point. | Decimal Degrees | -107.84 |
| Analysis | The analytical method performed by the lab. | Valid Values | Tot. Rec. Metals |